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While the book is a good one, we doubt whether, considering its handicap, there is room for it in the German market in competition with the other excellent texts which are there available.—C. R. B. and C. J. C.

The lighting of plants

For almost the entire period of his half-century of fruitful activity as a physiologist, WIESNER has been occupied with the relations of light to the functions of plants, and for the last fifteen years he has devoted his attention particularly to the relation of light to the plant *as a whole*. This relation is expressed briefly in the word *Lichtgenuss*, a word impossible of translation. On that account he has suggested the less happy *photolepsy* (in English "light-catching"); for "lepsy" lacks the idea of limits set by satisfactoriness that is involved in *Genuss*. WIESNER has now brought together in book form an easily comprehensible synopsis of the results of his long study, carried on in many and diverse regions.² It would be a mistake, however, to suppose that the book consists of extracts from earlier works, on which confessedly it is based. In it a considerable number of researches are now first published, especially those on the specific green of the leaves of woody plants as related to their illumination. Also new is the attempt to present a physiological analysis of *Lichtgenuss*.

The *Lichtgenuss* (L) of a plant may be expressed either relatively or absolutely. Relatively it is that part of the total daylight which reaches it. Thus if i be the intensity of light reaching the plant taken as unity, and I the intensity of the total daylight expressed in that unit, then $L=i/I$. Absolutely L may be expressed in any convenient photometric units, and to photometric methods the author devotes the first chapter of the book. These, convenient and adaptable as they are, leave still to be desired a method which will reveal more accurately the photosynthetic value of the light which falls on a plant.

The second chapter analyzes the daylight, consisting as it does of direct and reflected sunlight in varying proportions, directions, and intensities, and shows how total light may be reckoned and graphically represented through the course of a day or a longer period. In the third chapter the illumination of plants is discussed, showing how it is affected by all sorts of conditions, and how plant form is influenced by the lighting. The fourth chapter is devoted to specific observations upon the photolepsy of various types of plants in their habitats; the fifth treats of the constancy or variability of photolepsy in different stages of development, and the optima thereof; the sixth discusses the dependence of photolepsy upon latitude and altitude, and includes particularly the author's observations in this country in 1904; the seventh deals with various sorts of leaf-fall; and the eighth points out the connection of mycorrhiza formation with the *Lichtgenuss*.

² WIESNER, J., *Der Lichtgenuss der Pflanzen*. Photometrische und physiologische Untersuchungen mit besonderer Rücksichtnahme auf Lebensweise, geographische Verbreitung und Kultur der Pflanzen. 8vo. pp. viii + 322. figs. 25. Leipzig: Wilhelm Engelmann, 1907. M9.

In the ninth chapter WIESNER describes the differences in tone that have often been observed in the green of leaves and connects it with the excess, deficiency, or sufficiency of the illumination, much as STAHL and JÖNSSON had done on somewhat different grounds. The tenth chapter attempts a physiological analysis of the *Lichtgenuss*, which inevitably is "up in the air." The last chapter shows how the study of light relations by the photometric methods proposed can be of service in plant culture; and how the results of such study may serve as guides to proper planting in all sorts of conditions and locations. A bibliography (4 pp.) and a double index (topics and plant names) complete the book.

While for him who wishes to carry on investigations along these lines the various memoirs that have come from WIESNER'S hand are indispensable, this book will better serve one who desires merely a general statement of results and principles. At the same time it must be said that the book contains much that is wholly familiar and commonplace, so that it might have been much condensed to advantage; but perhaps the picture would not have been so complete. Furthermore, the book is by no means free from doubtful generalizations and generous assumptions; indeed, it seems that everyone who deals with adaptations must allow his imagination a rather loose rein. Withal there is in the work an important nucleus of no little value, and even an occasional flight of fancy may be permitted, if it stimulate interest.—C. R. B.

MINOR NOTICES

Cryptogamic flora of Brandenburg.³—The second part of the volume on Algae, by LEMMERMAN, has now appeared. It concludes the Oscillatoriaceae; includes Nostocaceae, Microchaetaceae, Scytonemataceae, Stigonemataceae, Rivulariaceae, and Campotrichiaceae; and begins the Flagellatae.—J. M. C.

List of British plants.—DRUCE⁴ has published a list of British plants, including the "Spermophytes, Pteridophytes, and Charads," found either as natives or growing in a wild state in Britain, Ireland, and the Channel Isles. The introduction contains a protest against the *nomina conservanda* of the Vienna Congress, and these are "deliberately ignored." The list is especially for "working botanists and members of the exchange clubs." The census of species shows 1390 native species, 144 alien species now well established, and 940 more or less fugitive aliens, the total enumeration including 2964 numbers.—J. M. C.

Trees and shrubs.—A preliminary announcement of SARGENT'S *Trees and shrubs* appeared in this journal in 1902, and there followed notices⁵ of the four parts which completed the first volume in 1905. The first part of the second

³ LEMMERMAN, E., Kryptogamenflora der Mark Brandenburg, Band 3, Heft 2. Algen. pp. 129-304. Leipzig: Gebrüder Borntraeger. 1907. Algen (Band 3, Heft 1 u. 2). M9.50.

⁴ DRUCE, GEORGE CLARIDGE, List of British plants. pp. xv + 104. Oxford: Clarendon Press. 1908. 2s. 6d.

⁵ BOT. GAZETTE 34:388. 1902; 35:62. 1903; 36:68. 1903; 37:155. 1904; 39:372. 1905.